REMARKS

Claims 1-21 are rejected under 35 U.S.C. 112 as being indefinite. Applicants respectfully traverse the rejection. The Examiner states "Claim 1 shows a barrier and a quantum well but, in fact, for a layer to be a well, it must be surrounded by two barriers." In fact, to be a quantum well, an active layer need only be surrounded by two layers with a higher band gap than the quantum well. The layers surrounding the quantum well need not necessarily be barrier layers. Accordingly, a quantum well can have a spacer layer on one side and a barrier layer on the other, or a barrier layer on one side and a cap layer on the other. Claims 1 and 2 are amended to recite "the spacer layer and the cap layer each have a larger band gap than the quantum well layer." Applicants respectfully submit that all claims meet the requirements of 35 U.S.C. 112.

Claims 1, 5-9, 11-14, 16 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Koide et al. Claim 1 is amended to recite "an upper confinement layer overlying *and adjacent to* the cap layer, the upper confinement layer comprising $In_xGa_{1-x}N$, wherein $0 \leq x \leq 0.15 \ldots$." (Emphasis added.) Fig. 1 of Koide et al. teaches an AlGaN layer 7a overlying and adjacent to layer 5c, which the Examiner cited as the cap layer. Thus, Koide et al. does not anticipate Claim 1. In addition, it would not be obvious to remove Koide et al.'s layer 7a such that layer 7b is adjacent to layer 5c, since layers 7a and 7b serve different purposes. Layer 7a "mainly performs the electron confinement effect" (column 5, line 47), while layer 7b "is provided to decrease contact resistance with respect to electrodes" (column 5, lines 62-63). Without layer 7a, Koide et al.'s device may suffer from reduced efficiency as a result of less electron confinement, thus Koide et al. does not render obvious a device with "an upper confinement layer overlying *and adjacent to* the cap layer, the upper confinement layer comprising $In_xGa_{1-x}N$, wherein $0 \leq x \leq 0.15$" as recited in Claim 1. Accordingly, Claim

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1 is allowable over Koide et al. Claims 6-21 depend from Claim 1 and are therefore allowable for at least the same reason.

Applicants thank the Examiner for indicating that Claims 2-4, 10, 15, and 18-21 are allowable if rewritten to overcome the rejection under 35 U.S.C. 112. Claim 2 is amended into independent form and to overcome the rejection under 35 U.S.C. 112. Claims 3-5 are amended to depend from Claim 2. Applicants respectfully submit that Claims 2-5 are also allowable.

In view of the above arguments, Applicants respectfully request allowance of Claims 1-21. Should the Examiner have any questions, the Examiner is invited to call the undersigned at (408) 382-0480.

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Respectfully submitted,

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ATTACHMENT A

IN THE CLAIMS

Claims are amended as follows:

1. (Amended) A light emitting device comprising:

a substrate;

a first conductivity type layer overlying the substrate;

a lower confinement layer overlying the first conductivity type layer, the lower confinement layer comprising $In_xGa_{1-x}N$, wherein $0 \leq x \leq 0.15$;

a spacer layer overlying the first conductivity type layer;

an active region overlying the spacer layer, the active region comprising;

a quantum well layer; and

a barrier layer comprising indium;

a cap layer overlying the active region;

an upper confinement layer overlying and adjacent to the cap layer, the upper confinement layer comprising $In_xGa_{1-x}N$, wherein $0 \leq x \leq 0.15$; and

a second conductivity type layer overlying the cap layer;

wherein the spacer layer and the cap layer each have a larger band gap than the quantum well layer and wherein one of the spacer layer and the cap layer comprises indium.

2. (Amended) [The light emitting device of Claim 1] A light emitting device comprising:

a substrate;

a first conductivity type layer overlying the substrate;

a lower confinement layer overlying the first conductivity type layer, the lower confinement layer comprising $In_xGa_{1-x}N$, wherein $0 \leq x \leq 0.15$;

a spacer layer overlying the first conductivity type layer;

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an active region overlying the spacer layer, the active region comprising;

a quantum well layer; and

an InGaN barrier layer with [wherein the barrier layer is InGaN having] an indium composition between about 1% and about 15%;

a cap layer overlying the active region;

an upper confinement layer overlying the cap layer, the upper confinement layer comprising $In_xGa_{1-x}N$, wherein $0 \leq x \leq 0.15$; and

a second conductivity type layer overlying the cap layer;

wherein the spacer layer and the cap layer each have a larger band gap than the quantum well layer and wherein one of the spacer layer and the cap layer comprises indium.

3. (Amended) The light emitting device of Claim [1] 2 wherein the barrier layer is InGaN having an indium composition between about 1% and about 5%.

4. (Amended) The light emitting device of Claim [1] 2 wherein the barrier layer is doped with a dopant of first conductivity type to a concentration between about 10^{15} cm^{-3} and about 10^{19} cm^{-3}.

5. (Amended) The light emitting device of Claim [1] 2 wherein:

the barrier layer has a thickness between about 20 angstroms and about 250 angstroms;

the quantum well layer has an indium composition between about 4% and about 25%; and

the quantum well layer has a thickness between about 10 angstroms and about 60 angstroms.

15. (Amended) The light emitting device of Claim 1 wherein:

the upper confinement layer has a first indium composition;

the cap layer has a second indium composition;

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the quantum well layer has a third indium composition;

the third indium composition is greater than the second indium composition; and

the second indium composition is greater than or equal to the first indium composition.

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